

Table 1*CD28 family superagonistic epitopes*

Epitopes are named according to the strands from which they derive.

<i>Protein</i>	<i>A'</i>	<i>B</i>	<i>C-C'</i>	<i>C''-D</i>	<i>E</i>	<i>F</i>	<i>G</i>
hCD28	SPMLV	AVNLS	SLHKGLDSAVEVCV	VYSKTGFNCDG	FYLQN	TDIYFC	NGTIIHV
hCTLA-4	PAVVL	GIASFV	TVLRQADSQVTEVCA	FLDDSICTG	LTIQG	TGLYIC	NGTQIYV
hICOS	YEMFI	GVQIL	QLLKGGQILCD	VSIKSLKFCHS	FFLYN	ANYYFC	TGGYLHI
	(SEQ ID NOs:23, 24, 25)	(SEQ ID NOs:26, 27, 28)	(SEQ ID NOs:29, 30, 31)	(SEQ ID NOs:32, 33, 34)	(SEQ ID NOs:35, 36, 37)	(SEQ ID NOs:38, 39, 40)	(SEQ ID NOs:41, 42, 43)

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PD-1 and BTLA superagonistic epitopes

<i>Protein</i>	<i>A</i>	<i>B</i>	<i>C-C'</i>	<i>C''-D</i>	<i>E</i>	<i>F</i>	<i>G</i>
hPD-1	PALLVV	DNATF	RMSPSNQTDK	QPGQDCFR	MSVVR	NDSGTY	LRAELR
hBTLA	QSEHSI	DPFEL	KLNG	QTSWK	LHFEP	NDNGSY	TTLYVT
	(SEQ ID NOs:44, 45)	(SEQ ID NOs:46, 47)	(SEQ ID NOs:48, 49)	(SEQ ID NOs:50, 51)	(SEQ ID NOs:52, 53)	(SEQ ID NOs:54, 55)	(SEQ ID NOs:56, 57)

Table 3

<i>Protein</i>	<i>Sequence</i>
hCD28	GNYSQQQLQVYSKTGF (SEQ ID NO:58)
hCTLA-4	YMMGNELTFLDDS (SEQ ID NO:59)
hICOS	KTKGSGNTVSIKSLK (SEQ ID NO:60)
hPD-1	LAAFPEDRSQPGQDCR (SEQ ID NO:61)

Table 5

DNA sequence of human CD28 cDNA (SEQ ID NO: 15)

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agactctcag gccttggcag gtgcgtcttt cagttcccct cacacttcgg gttcctcggg      60
gaggaggggc tggaacccta gcccacgtc aggacaaaga tgctcaggct gctcttggct      120
ctcaacttat tcccttcaat tcaagtaaca ggaaacaaga ttttggtgaa gcagtcgccc      180
atgcttgtag cgtacgacaa tgcgggtcaac cttagctgca agtattccta caatctcttc      240
tcaaggaggat tccgggcata ccttcacaaa ggactggata gtgctgtgga agtctgtgtt      300
gtatatggga attactccca gcagcttcag gtttactcaa aaacgggggt caactgtgat      360
gggaaatttg gcaatgaatc agtgacattc tacctccaga atttgtatgt taaccaaaca      420
gatatttact tctgcaaaat tgaagttatg tatcctcttc cttacctaga caatgagaag      480
agcaatggaa ccattatcca tgtgaaaggg aaacaccttt gtccaagtcc cctatttccc      540
ggaccttcta agcccttttg ggtgctgggt gtggttggtg gagtcctggc ttgctatagc      600
ttgctagtaa cagtggcctt tattattttc tgggtgagga gtaagaggag caggctcctg      660
cacagtgact acatgaacat gactcccgcc cgcccggggc ccaccgcaa gcattaccag      720
ccctatgccc caccacgcca cttgcgagcc tatcgtctct gacacggacg cctatccaga      780
agccagccgg ctggcagccc ccctctgtct aatatcactg ctctggatag gaaatgacgg      840
ccctctccag ccggccacct cagccctgtt tgggccacca atgccaatTT ttctcgagtT      900
actagaccaa atatcaagat cattttgaga ctctgaaatg aagtaaaaga gatttctctg      960
gacaggccaa gtcttacagt gccatggccc acattccaac ttaccatgta cttagtgact      1020
tgactgagaa gttagggtag aaaaacaaaaa gggagtggtat tctgggagcc tcttcccttt      1080
ctcactcacc tgcacatctc agtcaagcaa agtgtggtat ccacagacat tttagttgca      1140
gaagaaaggc taggaaatca ttcccttttg ttaaattgggt gtttaatctt ttggtttagtg      1200
ggttaaaacgg ggtaagttag agtaggggga gggataggaa gacatattta aaaaccatta      1260
aaacactgtc tcccactcat gaaatgagcc acgtagttcc tatttaatgc tgttttcctt      1320
tagtttagaa atacatagac attgtctttt atgaattctg atcatattta gtcattttga      1380
ccaaatgagg gatttggtca aatgagggat tccctcaaag caatatcagg taaaccaagt      1440
tgctttcttc actccctgtc atgagacttc agtgttaatg ttcacaatat actttcgaaa      1500
gaataaaata gttc      1514

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Amino acid sequence of human CD28 (SEQ ID NO:1)

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MLRLLLALNL FPSIQVTGNK ILVKQSPMLV AYDNAVNLSC KYSYNLFSRE FRASLHKGLD
SAVEVCVVYG NYSQQLQVYS KTGFNCDGKL GNESVTFYLQ NLYVNQTDIY FKIEVMYPP
PYLDNEKSNG TIIHVKGKHL CPSPLFPGPS KPFWVLVVVG GVLACYSLLV TVAFIIFWVR
SKRSRLHSD YNMTPRRPG PTRKHYPYA PPRDFAAYRS

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The extracellular domain is shown in bold

The stalk region is underlined